

**Appendix B**  
**Moca 2012 SWMP**



## **MUNICIPALITY OF MOCA**

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NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
REGULATED SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4)  
PHASE II

**MUNICIPALITY OF MOCA**  
**STORM WATER MANAGEMENT PROGRAM (SWMP) - 2012**  
**(NPDES PERMIT NO. PRR040025)**

Developed by:



**TETRA TECH**

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Revised: June, 2012



**Municipality of Moca**  
**MS4 - Storm Water Management Program (SWMP)**

June 28, 2012

Eng. Sergio Bosques Nieves  
Storm Water Program Coordinator  
U.S. Environmental Protection Agency Region II  
Caribbean Environmental Protection Division  
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Guaynabo, Puerto Rico 00968-8069

RE: Municipality of Moca Stormwater Management Program

Dear Eng. Sergio Bosques

The Municipality of Moca submitted a Storm Water Management Program (SWMP) plan to the USEPA on December, 2010. After reviewing the MS4's SMWP of the Municipality of Moca, on January 18, 2012, the USEPA submitted to the Municipality a letter of deficiencies to be addressed. In response to this letter, the Municipality of Moca developed and is submitting a revised SWMP that addressed the comments provided by USEPA.

If you need more information, please do not hesitate to contact me at 787-632-8329 or Eng. Hector L. Loperena at 787-877-3011 or 787-818-4379, Municipality of Moca - MS4 SWMP Implementation Coordinator, at your convenience.

Sincerely,

A handwritten signature in blue ink, reading "Jose E. Aviles Santiago".

Jose E. Aviles Santiago  
Mayor  
Municipality of Moca



**Municipality of Moca**  
**MS4 - Storm Water Management Program (SWMP)**

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## **BACKGROUND**

EPA's Storm Water Phase II Rule establishes that Municipal Separate Storm Sewer Systems (MS4) must develop and implement a Storm Water Management Program (SWMP) with the purpose of improving the Nation's water ways by reducing the quantity of pollutants that is transported into Storm Water Sewer Systems during Storm Water events. It is required that the developed SWMP comply with the following objectives:

1. Reduce the discharge of pollutants to the Maximum Extent Practicable (MEP)
2. Protect water quality
3. Satisfy the appropriate water quality requirements of the Clean Water Act (CWA)

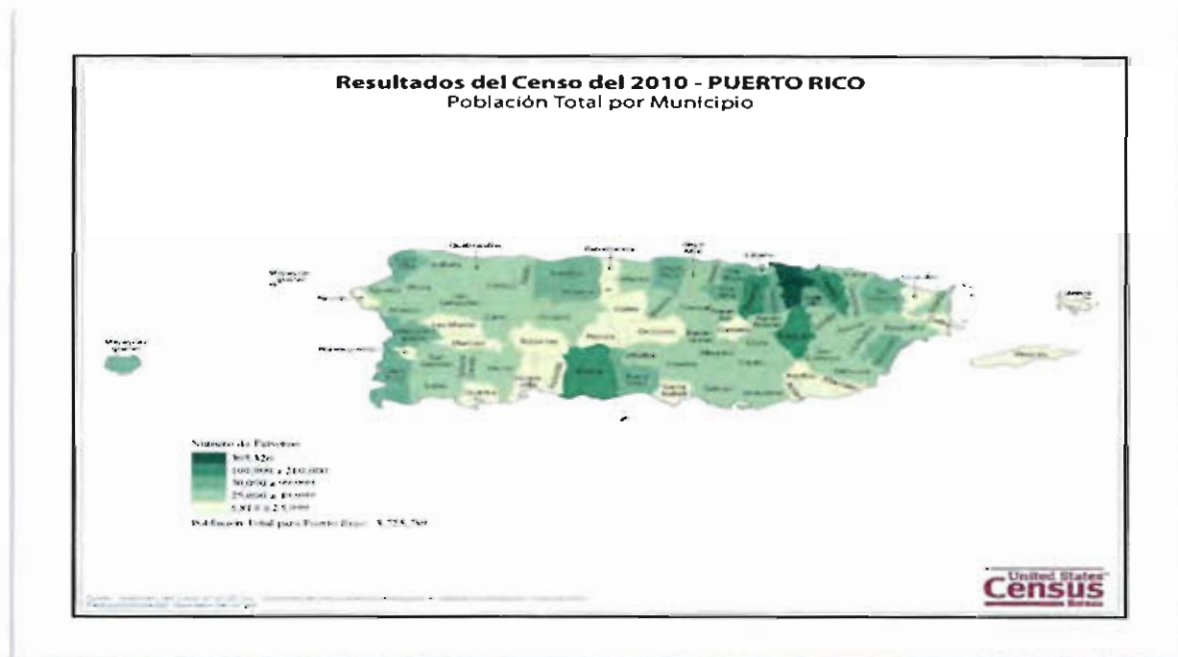
On November 6, 2006 USEPA Region 2 issued a general National Pollutant Discharge Elimination system (NPDES) permit for Puerto Rico's MS4 (PRR040000). The Municipality of Moca submitted a NOI on September 2007 and a SWMP on December 2010 requesting coverage under Puerto Rico's General Permit. The Permit No. assigned is PRR040025. After evaluating the SWMP, on January 18, 2012, USEPA submitted to the Municipality of Moca a letter of deficiencies. In response to this letter, the Municipality of Moca developed and is submitting a revised SWMP.



## INTRODUCTION

The Municipality of Moca was founded on 1772. It is located in the Northwestern part of the Island. It is bordered by the municipalities of Aguadilla and Isabela to the North, the municipality of Añasco to the South, the municipality of Aguada to the West, and the municipality of San Sebastián to the East. It occupies an area of 51 square miles. A map and detailed information regarding the distribution of the total population of Puerto Rico and its municipalities, as per the 2010 Census, is shown on Map 1 and Table 1.

*Map 1 – Population Data per Municipality - Census 2010 Results<sup>1</sup>*



*Table 1 – Moca Population Change from 2000 to 2010<sup>2</sup>*

Geographical Area	Population		Change 2000 to 2010
	2000	2010	Percent (%)
Puerto Rico	3,808,610	3,725,789	-2.2
Municipality of Moca	39,697	40,109	1

<sup>1</sup> [http://2010.census.gov/news/img/cb11cn120\\_pr\\_totalpop\\_2010map.jpg](http://2010.census.gov/news/img/cb11cn120_pr_totalpop_2010map.jpg)

<sup>2</sup> <http://www.censo.gobierno.pr>





## Municipality of Moca MS4 - Storm Water Management Program (SWMP)

The total population of the Municipality of Moca is estimated to be 40,109 inhabitants, as per the 2010 Census, with a total population density of 307.6 habitants per square mile. The United States Census has identified a total of 34.1 square miles of urban areas for the Municipality. The total percent change in population since the last census is shown in Table 1.

In Map 3 are identified the 12 wards of Moca's Municipality. The SWMP best management practices for each Minimum Control Measure will be implemented with emphasis in the wards that are located inside the Urbanized Area as identified in the 2010 Census. The total percent change in population since the last census is shown in Table 1.

The Municipality's wards include:

- |                |                            |
|----------------|----------------------------|
| 1. Aceitunas   | 8. Plata                   |
| 2. Capá        | 9. Rocha                   |
| 3. Centro      | 10. Voladoras              |
| 4. Cerro Gordo | 11. Pueblo & Barrio Pueblo |
| 5. Cuchillas   | 12. Cruz                   |
| 6. Marías      |                            |
| 7. Naranjo     |                            |

**Map 2 – Wards of the Municipality of Moca**





**Municipality of Moca**  
**MS4 - Storm Water Management Program (SWMP)**

The population in 2000 and in 2010, and the total percent change of the wards located in the Municipality of Moca are shown in Table 2 and Map 3. Aceitunas, Moca-Pueblo and Pueblo are wards located in the Municipality of Moca urban areas as identified in the 2000 Census.

*Table 2 – Moca's Municipality Urban Areas Population Distribution and Population Density<sup>3</sup>*

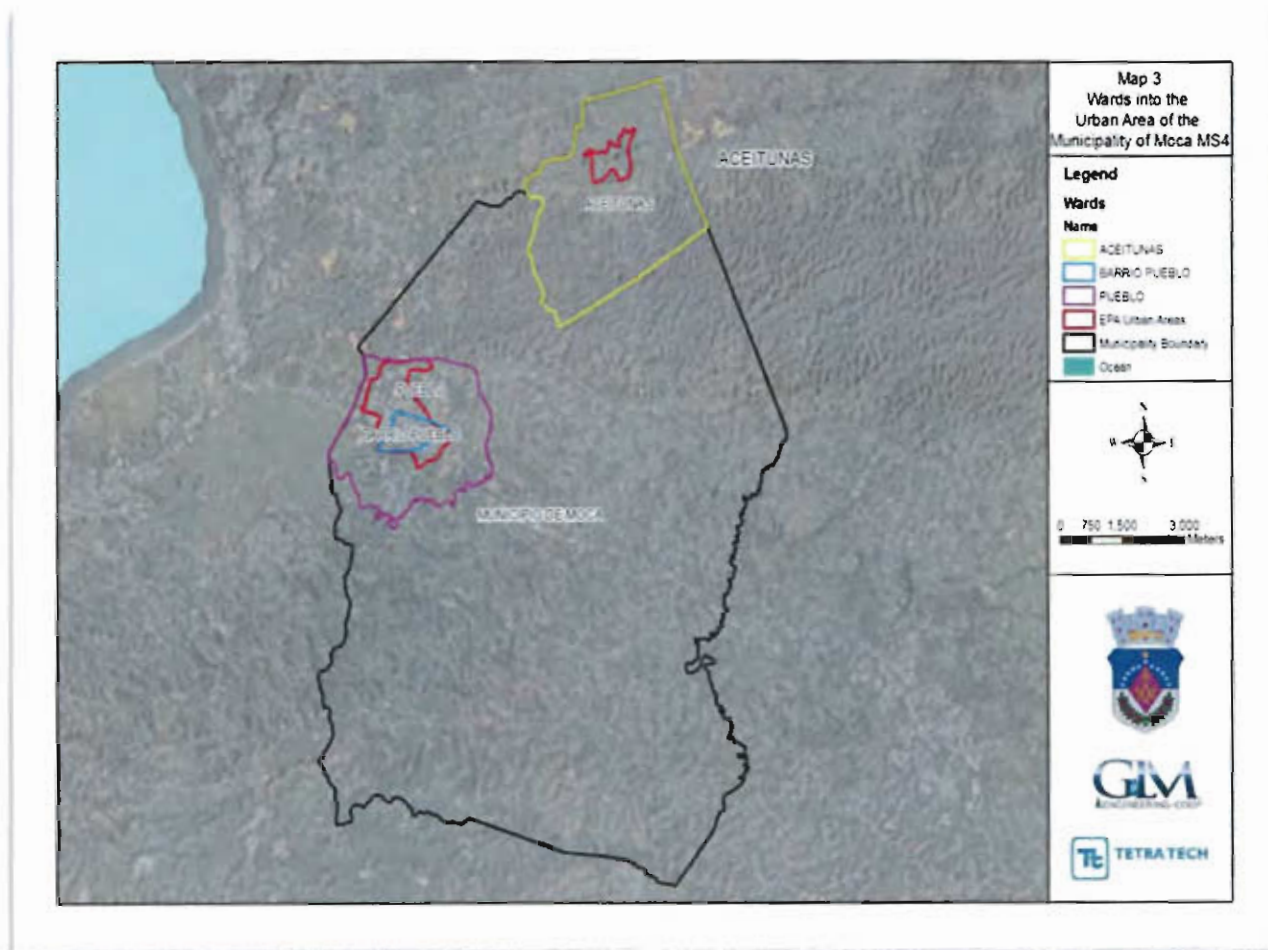
Municipality Urban Area Wards	Population		Change 2000 to 2010
	2000	2010	Percent (%)
Aceitunas	3,199	3,098	-3.2
Moca-Pueblo	1,980	1,735	-12.4
Pueblo	6,600	6,364	-3.6
Capa	3,354	3,747	11.7
Centro	1,139	1,056	-7.3
Cerro Gordo	3,875	2,478	-36.1
Cruz	1,147	1,127	-1.7
Cuchillas	4,507	4,352	-3.4
Marias	1,932	1,766	-8.6
Naranjo	2,690	2,875	6.9
Plata	996	2,797	180.8
Rocha	3,707	4,004	8.0
Voladoras	4,571	4,710	3.0

<sup>3</sup> Negociado del Censo Federal. Datos de Redistribucion Electoral; Censos 2000 y 2010 (Public Law 94-171); y Junta de Planificacion, Programa de Planificacion Economica y Social, Oficina del Censo. 24 de marzo del 2011.



**Municipality of Moca**  
**MS4 - Storm Water Management Program (SWMP)**

*Map 3 – Wards of the Municipality of Moca*



The watershed of the Río Culebrinas includes a caption area of approximately 103 square miles. This river originates in the mountainous area of the Municipality of Lares at an elevation of approximately 1,580 above sea level. This river flows westward through the municipalities of San Sebastián, Moca and discharge at the Mona Passage in the Municipality of Aguada. Its major tributaries include the Juncal, Guatemala, Sonador and Cañas Rivers as well as the Grande, Salada, de las Damas, Yagruma, Las Marias, Viejo, Los Morones y el Salto creeks. The watershed includes the urban areas of the municipalities of San Sebastián, Moca, Aguada and some sectors of Lares<sup>4</sup> (See Map 4).

<sup>4</sup> <http://www.drna.gobierno.pr/oficinas/arn/agua/negociadoagua/planagua/inventario-recursos-deagua/cuencas-hidrograficas/Culebrinas.doc>

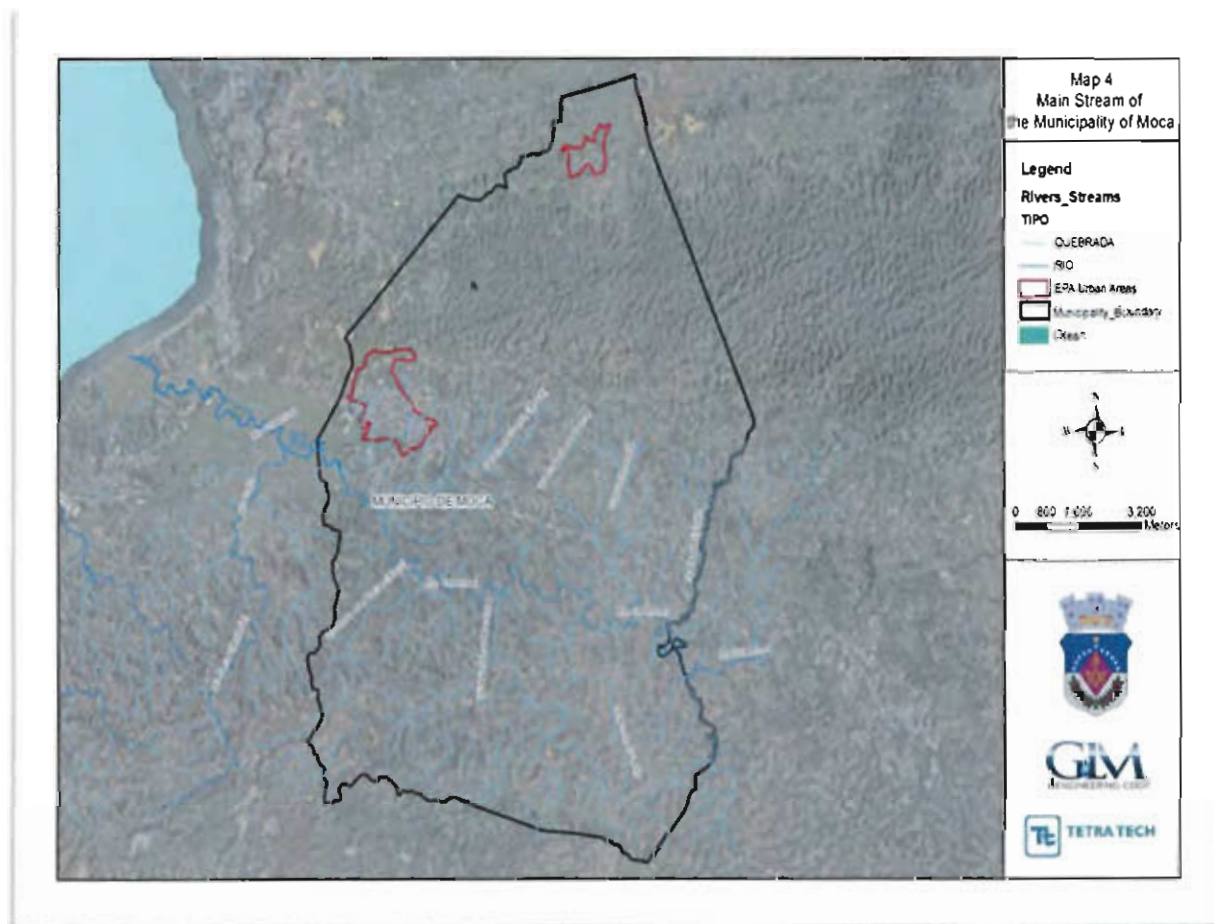




## Municipality of Moca MS4 - Storm Water Management Program (SWMP)

Climate in the watershed varies from humid subtropical to very humid with an annual average precipitation of 88 inches. Typically, dry weather is reported from January thru April. Heavy rain is reported during the months of May and June, dry weather during July and August and intermittent rain from this month until December. The surface geology of the watershed includes rocks of volcanic origin and marine sedimentary limestone and marine deposits. Volcanic rocks occur mostly to the South of the Culebrinas River. Limestone rocks are present mostly to the North of the Culebrinas River while alluvial deposits predominate near the coast<sup>5</sup>.

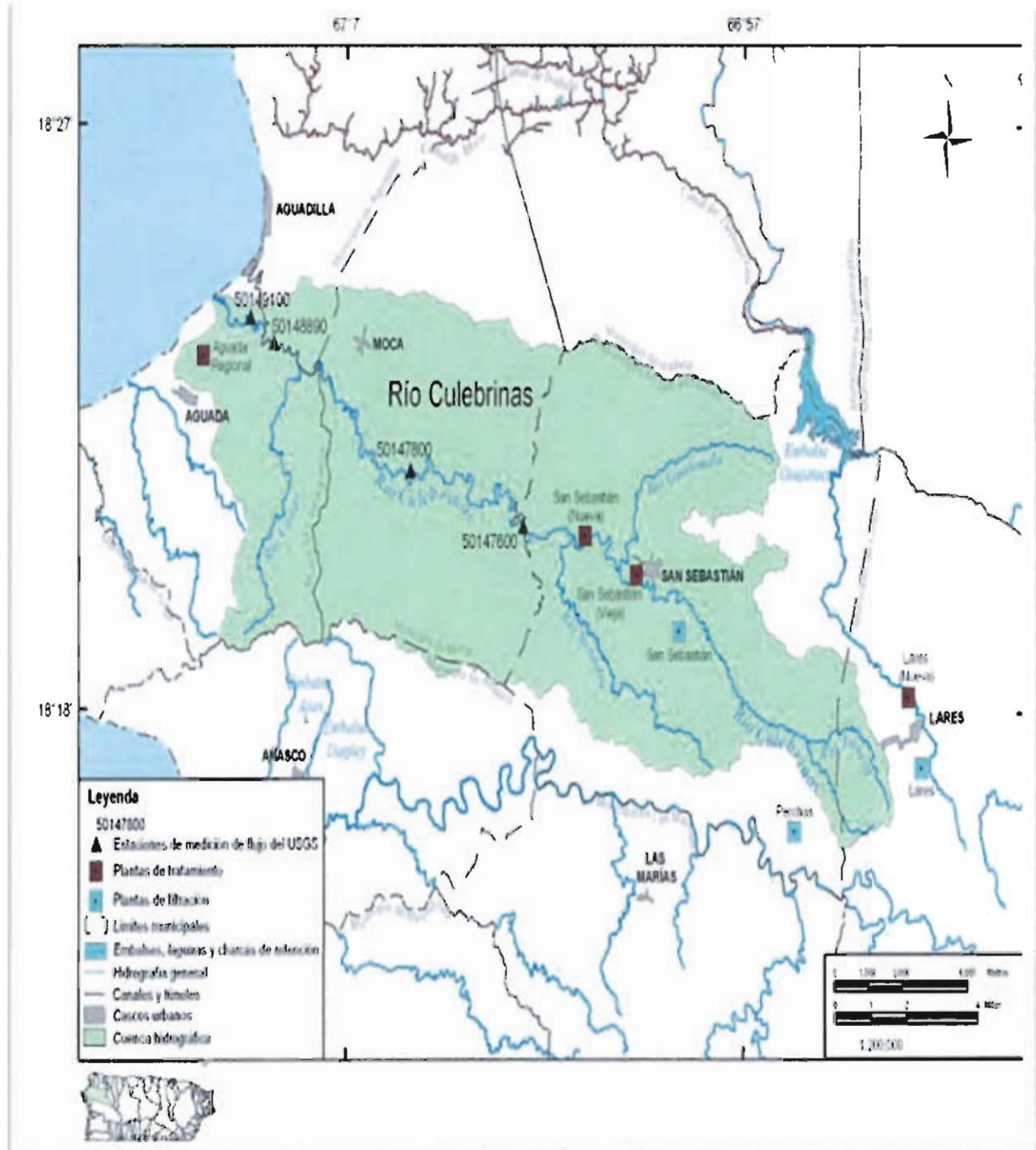
*Map 4 – Main Streams of the Municipality of Moca*



<sup>5</sup> <http://www.drna.gobierno.pr/oficinas/arn/agua/negociadoagua/planagua/inventario-recursos-deagua/cuencas-hidrograficas/Culebrinas.doc>



*Map 5 –Culebrinas River Watershed*





**Municipality of Moca**  
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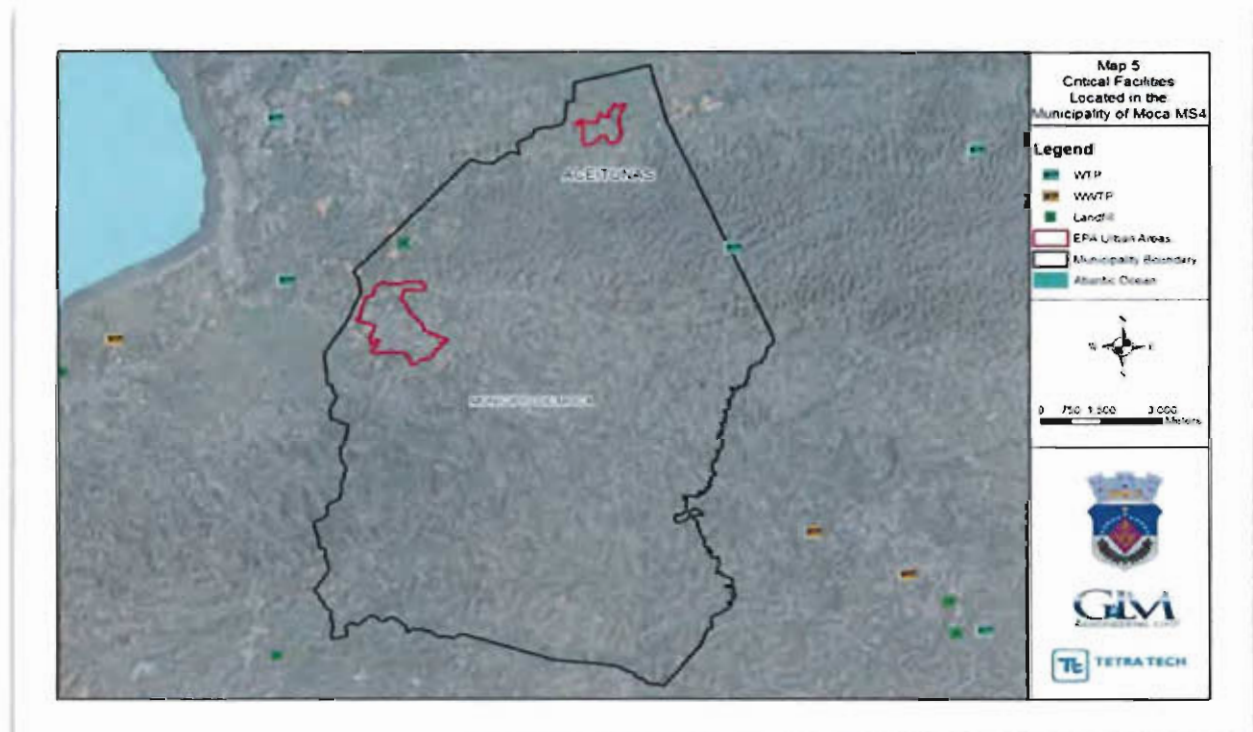
## **MUNICIPALITY OF MOCA MS4**

The United States Census has identified an urban area for the Municipality which occupies a surface area of approximately 34 square miles. The geographic boundaries of the MS4 plan are the municipality limits and the urban growth boundary (UGB). The Municipality's service area for stormwater planning encompasses approximately 0.52 square miles located within the UA, and approximately 2 square miles inside the UA of actual stormwater infrastructure. The Municipality has limited authority and responsibility for planning, building, operating, maintaining and regulating the stormwater drainage system within its limits. Therefore, and although the MS4 NPDES permit imposes total responsibility on the Municipality over its compliance, part of the stormwater development and management responsibilities fall under the state government.

The Municipality of Moca MS4 is interconnected with the Puerto Rico Highway and Transportation Authority's MS4, which is operated by the Puerto Rico Department of Transportation and Public Works. A memorandum of understanding will be discussed with the Puerto Rico Highway and Transportation Authority to implement the BMPs proposed in this SWMP.

Several infrastructure facilities are located within, or near the Moca urban area. Map No. 5 shows the facilities and its location, which include: the Culebrinas River and its tributaries, water wells and potable and sanitary pump stations. All infrastructure locations within the topographic map are provided with a buffer zone extending one-mile beyond their property boundaries.

***Map 6 –Facilities Located in the Municipality of Moca MS4***







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## **IMPAIRED WATERBODIES**

The Puerto Rico Environmental Quality Board (PREQB) is the local agency responsible for seeking the attainment of the designated uses established in the Water Quality Standards Regulation for the various water resources. The agency is also responsible for the oversight, maintenance and protection of the quality of these water resources. To comply with the requirements established in Section 305(b) of the Clean Water Act (CWA), PREQB performs the required assessment in terms of the current water quality in the different water resources throughout Puerto Rico. These assessments allow PREQB to determine whether or not these resources comply with the applicable water quality standards and achieve the designated uses: Primary and Secondary Contact Recreation, Aquatic Life, and Raw Source for Drinking Water.

Under section 303(d) of the Clean Water Act, states, territories, and authorized tribes are required to develop lists of impaired waters. These are waters that are too polluted or otherwise degraded to meet the water quality standards set by states, territories, or authorized tribes. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop Total Maximum Daily Load (TMDLs) for these waters. TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards.

The watershed of the Río Culebrinas includes a catchment area of approximately 103 square miles (DRNA, 2004. *Inventario de Recursos de Aguas de Puerto Rico*). This river originates in the mountainous area of the Municipality of Lares at an elevation of approximately 1,580 ft above sea level. This river flows westward through the municipalities of San Sebastián, Moca and discharge at the Mona Passage in the Municipality of Aguada. Its major tributaries include Río Juncal, Guatemala, and Sonador (upstream the Municipality of San Sebastián), and Río Cañas (Municipality of Aguada) as well as Quebrada Grande, Salada, de las Damas, Yagruma, Las Marias, Viejo, Los Morones, and El Salto. The watershed includes the urban areas of the municipalities of San Sebastián, Moca, Aguada and some sectors of Lares.

The Municipality of Moca has two (2) wards identified in the EPA MS4 program as Urban Areas. The first area corresponds to the Pueblo Ward and the second area is located in Aceitunas Ward to the north - northeastern region of the Municipality, at the karst zone.

Climate in the watershed varies from humid subtropical to very humid with an annual average precipitation of 88 inches. Typically, dry weather is reported from January thru April. Heavy rain is reported during the months of May and June, dry weather during July and August and intermittent rain from this month until December.

The surface geology of the watershed includes rocks of volcanic origin and marine sedimentary limestone and marine deposits. Volcanic rocks occur mostly to the South of the Culebrinas River. Limestone rocks are present mostly to the North of the Culebrinas River while alluvial deposits predominate near the coast.



**Municipality of Moca**  
**MS4 - Storm Water Management Program (SWMP)**

The water quality assessment for the 2010 cycle indicates that 2,053 of all rivers and stream miles are impaired and TMDLs would be required. The impairment for primary and secondary recreation uses was due to fecal coliforms violations to the standard. For aquatic life and drinking water uses impairment violations to arsenic, turbidity, surfactants, copper and cyanide were the most common causes. EQB requested chemical and biological data on water bodies. The purpose was to determine if this information may be useful in the evaluation of corresponding water bodies.

The Environmental Quality Board prepares the 305 (b) and 303 (d) Integrated Report. This report is required to Puerto Rico for every two (2) years cycle (2006, 2008, 2010). The Culebrinas River was included in the 2009 305(b)/303(d) list of impaired water for compliance with designated uses and water quality standards.

Under Section 303(d) of the CWA, states are required to identify waters that fail to meet the water quality standards, and are required to develop Total Maximum Daily Loads (TMDLs) to address the specific pollutants contributing to the water quality degradation<sup>6</sup>. In 2010, the Puerto Rico Environmental Quality Board (PREQB) and the Environmental Protection Agency (EPA) developed the *Total Maximum Daily Load (TMDL) for the Impaired Waters of the Watershed of the Culebrinas River for Fecal Coliform* (Culebrinas River TMDL)<sup>7</sup>. The Culebrinas River Watershed is represented in Map 5.

According to Table 18 Rivers and Streams Assessment (Monitored and Unmonitored), (p. 87-88) of the 2010 Report, the sampling stations for this cycle were placed in the following places associated with the hydrographic basin of Río Culebrinas:

- Río Culebrinas (PRWR95A) – Municipality of Moca
- Río Caño (Río Cañas) (PRWR95B)
- Quebrada Grande (Sector Cuchillas) (PRWR95C)
- Quebrada Las Marías (PRWR95D) – Municipality of Moca
- Quebrada Yagruma (PRWR95E) – Municipality of Moca
- Quebrada La Salle (PRWR95F)
- Quebrada El Salto (PRWR95G)
- Quebrada Grande de la Majagua (PRWR95H) –Municipality of Moca
- Quebrada Salada (PRWR95I)
- Río Sonador (PRWR95J) – Municipality of San Sebastián
- Río Guatemala (PRWR95K) - Municipality of San Sebastián

From this list, Río Culebrinas, Quebrada Las Marías, Quebrada Yagruma, and Quebrada Grande de Majagua are located totally or in part, at the Municipality of Moca. According to the 2010 Report, the assessment unit was not monitored for 2010 cycle (2008-2009 Federal fiscal years). External data was

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<sup>6</sup> [http://ofmpub.epa.gov/tmdl/waters10/attains/impaired\\_waters/impaired\\_waters\\_list?p\\_state=PR&p](http://ofmpub.epa.gov/tmdl/waters10/attains/impaired_waters/impaired_waters_list?p_state=PR&p)

<sup>7</sup> <http://www.epa.gov/waters/tmdl/docs/Fecal%20Coliform%20TMDL%20Rio%20Culebrinas.pdf>





**Municipality of Moca**  
**MS4 - Storm Water Management Program (SWMP)**

provided by the Puerto Rico Streams Survey Project for Río Culebrinas (Network: 50149100, 50147600; External Data: PR09GRAD-301). The identified sources of pollution are:

- Onsite wastewater systems (6500)
- Urban Runoff/storm sewers (4000)
- Minor Municipal Point Source (0220)
- Major Municipal Point Source (0210)
- Minor Industrial Point Source (0120)
- Landfills (6300)
- Agriculture (1300)
- Confined Animal Feeding Operations (1640)
- Collection Systems Failure (0500)

The causes of impairment are:

- Arsenic (0510)
- Copper (0530)
- Fecal Coliforms (1700)
- Lead (0550)
- Mercury (0560)
- Surfactants (0400)
- Turbidity (2500)

Since no data for 2010 was produced for the rest of the water bodies, we include the causes of impairment as reported for 2008 for those located (totally or in part) in the Municipality of Moca, (Table 46, pages 166-167, 305(b)/303(d) Integrated Report published by EQB).

- Río Culebrinas
  - a. Arsenic
  - b. Fecal Coliforms
  - c. Surfactants
  - d. Turbidity
  - e. Cyanide
- Quebrada Las Marias
  - a. Arsenic
  - b. Fecal Coliforms
- Quebrada Yagrumo
  - a. Not included in the list
- Quebrada Grande de Majagua (not reported)

EPA sent to PREQB a review of a total maximum daily load (TMDL) for Fecal Coliform for Río Culebrinas and other watersheds in Puerto Rico on September 2, 2010. Due to sources of pollution, including municipal and industrial point sources, collection system failure, urban runoff/storm sewers, confined animal feeding operations, agricultural practices, and onsite wastewater systems, it was determined that the Río Culebrinas system no longer meets the applicable PR water quality standards for Fecal Coliform.



**Municipality of Moca**  
**MS4 - Storm Water Management Program (SWMP)**

Federal regulations (40 CFR 130.7) require TMDLs to include individual WLAs for each point source. In addition, USEPA's storm water permitting regulations require municipalities to obtain permit coverage for all storm water discharges from urban municipal separate storm sewer systems (MS4). MS4s within the Culebrinas River watershed are identified as point sources for TMDL and NPDES permitting purposes and the bacteria loading generated within the boundary of an MS4 area has assigned a WLA in addition to the WLA for the point source dischargers.

Table 5-3 of the Culebrinas River TMDL summarizes the WLAs assigned to MS4 components included in Moca County. The allocation units in the Culebrinas River Watershed and the WLA data, related to the MS4 of the Municipality of Moca, are included in Map 6 and Table 3 respectively.

*Table 3 – Bacteria Loads for the Municipality of Moca MS4 components of the WLA<sup>8</sup>*

Urbanized Area	Municipality/UA Code  Assessment Unit	Bacteria Load (#/day FC Bacteria)		Percent Reduction  Percent (%)
		Baseline	WLA	
Aguadilla-Isabela-San Sebastian	Moca/631/PRWQ95C	9.91E+09	4.9488E+07	99.5
	Moca/631/PRWQ95D	1.60+09	3.1943E+06	99.8
	Moca/631/PRWQ95E	2.31E+09	4.6040E+06	99.8
	Moca/631/PRWQ95F	7.18E+09	3.5891E+07	99.5
	Moca/631/PRWQ95G	3.56E+09	1.7814E+07	99.5
	Moca/631/PRWQ95H	1.73E+09	5.1982E+06	99.7
	Moca/631/PRWR95A	2.41E+10	1.2023E+08	99.5
	Moca/631/PRWR95B	5.24E+07	1.5731E+05	99.7

<sup>8</sup> Fecal Coliform Bacteria TMDL, Rio Culebrinas-Draft Report, April 2010



The map displays the island of Puerto Rico divided into various Assessment Units (AUs). The AUs are color-coded and labeled with IDs: PRUNNAMED1 (red), PRUNNAMED2 (yellow), PRUNNAMED3 (orange), PRUNNAMED4 (light blue), PRWQ95C (light green), PRWQ95D (dark green), PRWQ95E (light yellow), PRWQ95F (dark green), PRWQ95G (brown), PRWQ95H (dark red), PRWQ95I (olive green), PRWQ95J (dark green), PRWQ95K (light yellow), PRWQ95L (dark green), PRWQ95M (dark green), PRWQ95N (dark green), PRWQ95O (dark green), PRWQ95P (dark green), PRWQ95Q (dark green), PRWQ95R (dark green), PRWQ95S (dark green), PRWQ95T (dark green), PRWQ95U (dark green), PRWQ95V (dark green), PRWQ95W (dark green), PRWQ95X (dark green), PRWQ95Y (dark green), PRWQ95Z (dark green). NPDES facilities are marked with small circles and labeled with IDs: PR0025551, PR0024317, PR0020851, PR0023981. A legend in the bottom left corner identifies the symbols for Assessment Unit ID, NPDES facilities, and Puerto Rico. A scale bar indicates distances up to 6 miles. An inset map in the bottom right corner shows the location of Puerto Rico within the Caribbean Sea.



## **POLLUTANTS OF CONCERN**

Based on the impaired waters information above, the following are considered pollutants of concern (POCs) for the Municipality of Moca: arsenic, copper, cyanide, lead, mercury, fecal coliform, surfactants and turbidity. The Municipality has identified six primary sources of these POCs:

- Sanitary sewer discharges – Overflows and cross connections between the sanitary sewer system and the storm water sewer system. (POCs: fecal coliform, surfactants)
- Failing Septic Systems - Failure on proper construction and maintenance of septic systems. Approximately 80 percent of homeowners use septic systems. (POCs: fecal coliform, surfactants)
- Commercial Facilities – Outdoor activities and solid waste/materials storage at facilities including but not limited to restaurants, laundromats, car wash, automotive facilities. (POCs: heavy metals, fecal coliform, turbidity)
- Municipal Street Cleaning, Solid Waste Management, and Vegetative Material Handling– Debris on the street, in the stormwater infrastructure and at municipal maintenance and storage facilities (POCs: heavy metals, turbidity)

These activities have been targeted with specific BMPs in the SWMP. The identified Pollutant's sources will be investigated and addressed as part of the SWMP implementation efforts. See the Illicit Discharge Detection and Elimination Minimum Control Measure.

## **MINIMUM CONTROL MEASURES**

According to the U.S. Environmental Protection Agency (USEPA), operators of regulated small MS4s are required to design their storm water management programs (SWMPs or Programs) to:

- Reduce the discharge of pollutants to the “maximum extent practicable” (MEP);
- Protect water quality; and
- Satisfy the appropriate water quality requirements of the Clean Water Act.

According to the General Permit, implementation of the MEP standard requires the development and implementation of BMPs and the achievement of measurable goals to satisfy each of six Minimum Control Measures:

- Public Education,
- Public Involvement,
- Illicit Discharge Detection and Elimination (IDDE),
- Construction,
- Post-Construction, and
- Pollution Prevention/Good Housekeeping for Municipal Operations.

The developed SWMP, includes BMPs for all six Minimum Control Measures, when implemented in concert, are expected to result in significant reductions of pollutants discharged into receiving surface waters.





**Municipality of Moca**  
**MS4 - Storm Water Management Program (SWMP)**

## Program Management

The Planning and Development Department Director will be responsible for implementing the proposed SWMP. A Storm Water Management Team (SWM Team) has been formed to include the managers responsible for implementing the various BMPs included in the SWMP. A meeting with the SWM Team will be held after submitting the revised SWMP Plan to inform the Municipality Staff regarding the contents of the Plan (including implementation tasks, the schedule). During this meeting the SWM Team responsibilities will be discussed and assigned. A certification specifying their specific responsibilities will be signed by each SWM Team member. Every quarter thereafter, the Planning and Development Department Director will hold a meeting with the SWM Team to discuss progress, reporting requirements, and address any issues or concerns. An organizational diagram of the SWM team is included below:



The Organizational Diagrams mention the departments and the position of the responsible employee. Most of them are department directors, and these positions have high probability to change every year or at least after every political election year. A list of the current directors and their contact information is included below:

Position	Name	Contact Information
Mayor	Jose E. Aviles Santiago	787-644-5216
Planning and Development Department Director	Ing. Hector Loperena	787-877-3011 787-818-4379
Sanitation Department	Mario Hilerio	787-818-0075
Public Works Department	Bienvenido Soto	787-818-0185
Municipal Police	Teniente Nelson Gonzalez	787-877-0980
Public Relations and Communication Department Director	Vanesa Colón	787-818-0105
Human Resources Director	David Cabán	787-877-2233
Finance Department Director	Virgenmina Medina	787-877-6018
Emergency Management Department Director	Adolfo Figueroa	787-877-5540
Sports and Recreational Department Director	Victor López	787-818-0105

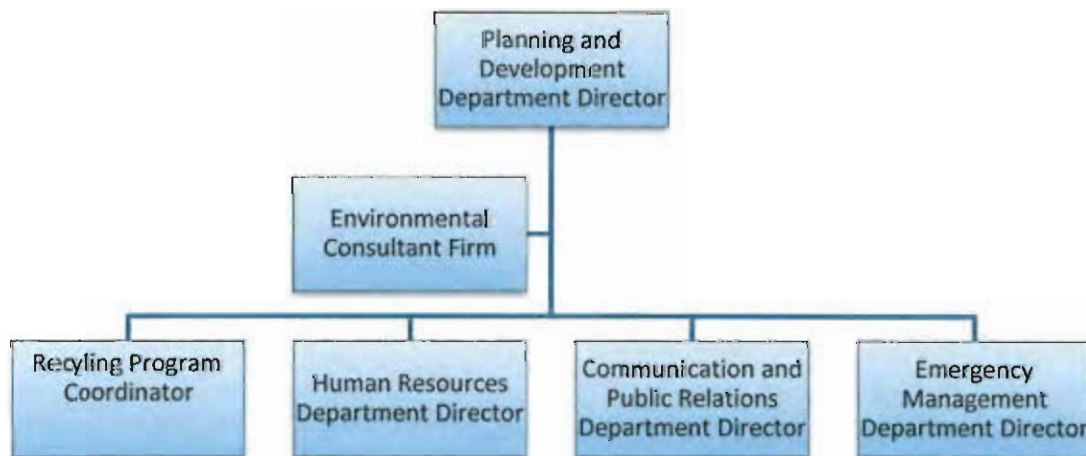


## Municipality of Moca MS4 - Storm Water Management Program (SWMP)

### Public Education and Outreach on Storm Water Impacts

The Municipality must implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff.

The Public Education and Outreach minimum control measure will be developed and implemented by the Planning and Development Director with assistance of an environmental consultant firm and in cooperation with the Recycling Program Director, the Human Resources Department Director, the Communications and Public Relations Department Director and the Emergency Management Department Director.



### *Rationale*

The Municipality will develop an environmental education program (EEP) to be used as a cost-effective foundation of this minimum control measure. The Municipality will develop and distribute materials with a general awareness message as well as targeted messages to specific audiences based on pollutants of concern. The Municipality will utilize existing educational and outreach materials, such as the EPA educational materials, materials developed by the Puerto Rico Agricultural Extension Department, Sea Grant Program, and PREQB's Water Quality Division. The Municipality will conduct a survey to determine the awareness level of various targeted audiences to better craft messages and delivery mechanisms.

### *Targeting Activities of Concern*

The Municipality considers failing septic systems, commercial facilities and municipal activities primary sources of pollutants of concern. The owners/managers of these sources will be targeted by the EEP based on findings of the awareness survey. Educational activities addressing all these sources will be implemented every year and progress will be monitored on a monthly basis, and will be reported on the annual report.



## **Municipality of Moca**

### **MS4 - Storm Water Management Program (SWMP)**

The Municipality will develop and implement an educational campaign for owners of septic tanks informing them of inspection and maintenance requirements. See the IDDE Minimum Control Measure for more information. In addition, as described further in the Pollution Prevention/Good Housekeeping MCM section below, the Municipality will provide educational materials to municipal staff regarding facilities management and activity-specific SOPs to reduce the discharge of pollutants.

The Municipality will also target owners/managers of commercial properties in the downtown area which are likely to discharge pollutants of concern such as automotive maintenance facilities, with educational materials encouraging the use of appropriate BMPs.

Finally, a general stormwater awareness program will be initiated through the development of Environmental Kids Clubs in public and private schools.

### ***Measurable Goals***

- Development of the EEP
  - Septic Tank Owners Program
  - Municipal Facilities and Activities Program
  - Commercial Facilities Program
  - Environmental Kids Club Program
- Quantity of Educational Material Developed and Reproduced.
- Number of events conducted in which storm water materials are distributed and/or a storm water message is delivered
- Number of school-age children educated on storm water issues
- Number of schools where Environmental Programs have been incorporated
- Number of commercial facility owners trained.
- Number of articles published on local newspaper or web site
- Number of homeowners educated on septic tank maintenance (Homeowners of 1 ward/year)

### ***Schedule & Milestones***

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Develop General Awareness Message	Nov 2011	--	2011
Develop Awareness Survey	August 2012	--	2012
Distribute Awareness Survey	Sept 2012- Nov 2012	--	2012



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**MS4 - Storm Water Management Program (SWMP)**

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Analyze Survey Results and Develop EEP	July 2013		2013
Implement EEP	Nov 2015	--	2013 - 2015
Post General Storm Water Information on Website	March 2013		2012
Publish Articles on Storm Water Pollution Prevention	Nov 2015	2 articles/year	2012-2015
Conduct Environmental Kids Club Presentations	Oct 2015	2/year	2011-2015
Incorporate storm water message into recycling program presentations	Aug 2012	--	2012
Conduct Commercial Facilities Owners Presentations	Nov 2015	2/year	2013-2015
Septic Tanks Home Owners Training	Nov 2015	1 ward/year	2013-2015

*Note 1:* Either Frequency or Deadline is provided based upon the type of milestone proposed.

*Note 2:* Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.

*Note 3:* Permit Years indicate the years in which the associated BMP will be implemented.



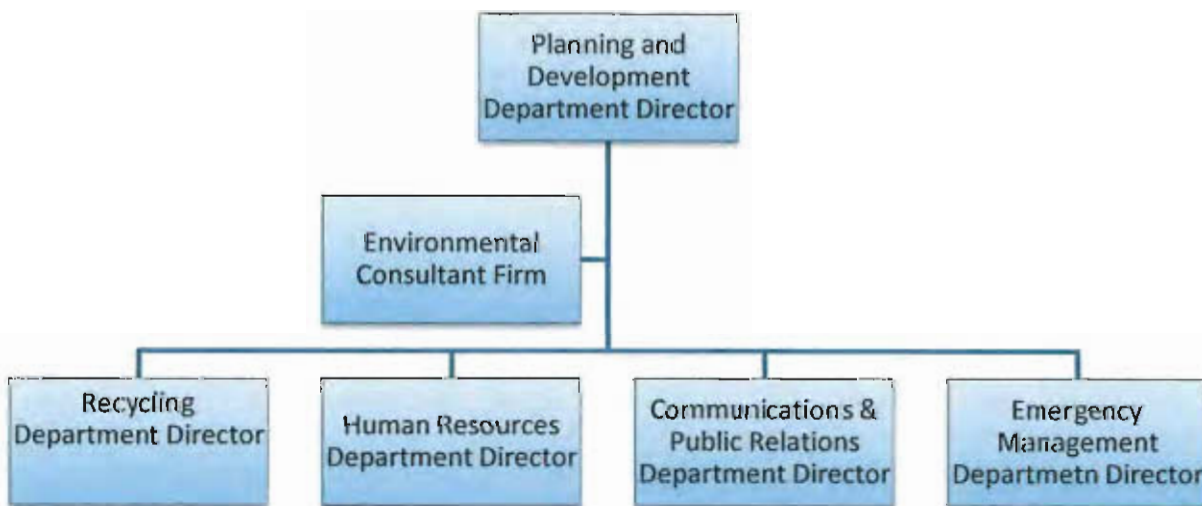


**Municipality of Moca**  
**MS4 - Storm Water Management Program (SWMP)**

## **Public Involvement/Participation**

The Puerto Rico Phase II MS4 General Permit requires that the Municipality provides the opportunity for citizens to participate in the SWMP plan development and implementation in compliance with State and local public notice requirements when implementing a public involvement/participation program. In addition the Municipality will document the decision process for the development of a storm water public involvement/participation program.

The Planning and Development Department Director, with collaboration of an environmental consultant firm, the Recycling Program Coordinator, the Human Resources Department Director, the Communications and Public Relations Department Director and the Emergency Management Department Director, will be responsible for implementing the Public Involvement Minimum Control Measure.



### ***Rationale***

Consistently involving the public will enhance SWMP plan implementation management efforts through effective communication, cooperation, and shared responsibility for storm water management efforts between the community and the Municipality of Moca.

The Moca Municipality will utilize existing activities as well as appropriate new methods to involve the public during the SWMP implementation. Participants in public involvement activities will be educated about the SWMP and invited to comment on the Program as well as volunteer their efforts to improve storm water quality. Currently the Municipality conducts the volunteer stream and lake cleanups and conducts public meetings regarding Municipality programs and policies. These existing events and programs will be used to solicit input from residents regarding the SWMP.

The Municipality will utilize a scheduled Moca Municipality Mayor's Annual Message Presentation meeting to educate the public about the SWMP as well as invite comments from stakeholders. There are



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two options; the Municipality's Achievement Annual Report (October) or the Municipality's Budget Status Report (May). For each year after, the Municipality will use the municipality Web Site to announce and post the submittal of the SWMP annual report and its availability online. The SWMP planning documents will also be available in public libraries.

In addition, the Municipality will develop and implement a volunteer storm drain labeling program. The Planning and Development Department will coordinate with the local residents, municipal schools, and/or environmental community groups to affix a metal storm drain marker near key storm drain inlets educating people that the water discharge directly to a surface waters with no treatment (i.e., No Dumping, Drains to the River).

The SWMP Website section will provide contact information for receipt of comments or questions. It will include a section in which residents can post comments and report illicit discharges or other storm water related issues.

In addition, the Municipality will include questions on the attitude survey (see the Public Education and Outreach on Storm Water Impacts section) to determine the most appropriate methods of involving the public in the SWMP developing and update process.

### *Measurable Goals*

The following measurable goals will be established in order to quantify MS4 permit compliance and program effectiveness.

- The development of a SWMP implementation Section in the Municipality's Annual Achievement report and in the Municipality's Budget Status report.
- Number of volunteers (Boys Scouts, Scuba Dogs, Liga Atletica Policiaca, 4H Group) enrolled to conduct activities with storm water benefits (i.e. stream cleanups)
- The number of volunteers participating in the storm drain labeling program
- The timely availability of SWMP documents and annual reports to the public on the municipality Website
- Development of a Municipal Educational and Informative Bulletin
- Number of Participants in the Event: "La Balseada del Rio Culebrinas"
- Number of Educative information Posted in "La Balseada del Rio Culebrinas"



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***Schedule & Milestones***

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Development of the Municipal Informative Bulletin	2015	1/year	2011-2015
Inform and Solicit Public Input at the Municipality's Annual Achievement Report	Nov 2015	1/year	2012-2015
Volunteer Events (i.e., stream and lake cleanups)	Nov 2015	2/year	2011-2015
Incorporate Storm Water Educative Information in the Activity named "La Balseada del Rio Culebrinas"	Nov 2015	1/year	2013-2015
Post SWMP Information on Website	Nov 2012	--	2012
Develop Art for Storm Drain Marker	Sept 2012	--	2012
Implement Storm Drain Marker Program	July 2015	--	2013 – 2015
Install Storm Drain Markers in coordination with Volunteers	July 2015	100 markers/year	2013 – 2015

*Note 1:* Either Frequency or Deadline is provided based upon the type of milestone proposed.

*Note 2:* Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.

*Note 3:* Permit Years indicate the years in which the associated BMP will be implemented.



**Municipality of Moca**  
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## **Illicit Discharge Detection and Elimination**

The Permit requires that the Municipality develop, implement and enforce a program to detect and eliminate illicit discharges; develops, if not already completed, a storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls; effectively prohibit, through ordinance, or other regulatory mechanism, non-storm water discharges (as defined in the National Pollutant Discharge Elimination System Puerto Rico General Permit No. PRR040000 for Discharges from Small Municipal Separate Storm Sewer Systems) into the permittee storm sewer system, and implement appropriate enforcement procedures and actions; inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste; and address the categories of non-storm water discharges or flows described in Section 4.2.3.1.6 of the Permit if the permittee identifies them as significant contributors of pollutants to the small MS4. In addition the Culebrina River TMDL requires that the Municipality address sources of fecal coliform.

The Planning and Development Department Director, the environmental consulting firm, the Sanitation Department Director, a representative from the Municipal Police, the Municipal Legislature, the Communications and Public Relations Department Director, the Public Works Department Director and the Finance Department Director will implement and coordinate the BMPs for the IDDE Minimum Control Measure.







## **Municipality of Moca** **MS4 - Storm Water Management Program (SWMP)**

### ***Rationale***

Implementing an effective illicit discharge detection and elimination program requires implementing BMPs which maximize the Municipality's ability to detect illicit discharges and find their sources and develop the tools necessary to stop the discharges from continuing or occurring again. The Municipality's and the general public must work together on detecting illicit discharges. This is accomplished by providing training to Municipality employees and education to the general public to encourage the reporting of discharges witnessed in the community and by using Municipality resources to inspect priority outfalls to determine which might have cross-connections or other illicit discharges regularly occurring. Once illicit discharges are discovered through either method, the success in eliminating the source is a factor of the legal authority in place and the enforcement actions used against the discharger. The BMPs described in the following section will implement this approach and prohibit non-storm water discharges to the MS4 to the maximum extent practicable.

### ***Illicit Discharge Detection and Elimination Plan***

The Municipality will develop an Illicit Discharge Detection and Elimination Plan (IDDE Plan) to utilize Municipality resources to detect and eliminate illicit discharges. The IDDE Plan will be a document which includes procedures for selecting areas of the storm sewer system that should be inspected during dry weather, a dry weather field screening protocol, a standard operating procedure (SOP) for investigating any suspected illicit discharges, and a method for tracking investigation activities. During the process to develop those documents, illicit discharges identified through the MS4 maps development, the Facilities inspection or other SWMP implementation activities, will be documented, a field investigation will be conducted to identify the source and will be confirmed if necessary. The Municipality will provide education to the responsible person and or entity and will request the elimination of the illicit discharge once it is confirmed.

Currently the Municipality is working in collaboration with the Puerto Rico Aqueduct and Sewer Authority (PRASA) to identify and eliminate the sanitary sewer system overflows. In 1993 only 19% of the residents simultaneously had the two services provided by PRASA, supply of drinking water and sanitary sewer connection. Means it that 81.2% of residents only receive drinking water service, i.e. 6,391 residents lacked of sanitary sewer service.

The Municipality will perform a desk top analysis to determine which sections of the MS4 are of the highest illicit discharge priority based upon factors such as the proximity to the Culebrina River, the age of the infrastructure, the land use(s) draining to the MS4, the concentration of aging septic tanks, the history of dumping or other illicit discharges, the impaired waters report, and the TMDLs requirements.

The dry weather field inspections will be conducted using an approach similar to the Outfall Reconnaissance Inventory (ORI) developed by the Center for Watershed Protection.<sup>9</sup>

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<sup>9</sup> Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Center for Watershed Protection. 2004. [www.cwp.org](http://www.cwp.org)



## **Municipality of Moca**

### **MS4 - Storm Water Management Program (SWMP)**

The ORI will be conducted following the same schedule developed for the Storm Sewer Infrastructure Maps. During the field inspections, the Municipality will mark and photograph all outfalls, record outfall characteristics, perform simple monitoring at flowing outfalls, and take a flow sample at outfalls with observed indications of pollutants.

The Municipality will develop an illicit discharge investigation SOP to ensure that major problems discovered during dry weather inspections (during regular Municipal activities or as a result of a citizen complaint) are dealt with immediately. The illicit discharge investigation SOP will include procedures for tracking illicit discharge “cases” to ensure all suspected illicit discharges (either detected through dry weather inspections, the MS4 infrastructure maps development, or reported) are investigated thoroughly and eliminated when at all possible. When sources of illicit discharges are discovered, the Municipality will utilize the appropriate enforcement actions per the enforcement response plan (ERP) (see the Legal Authority and Enforcement section below).

The IDDE Plan will incorporate the four (4) Programs of the Environmental Education Program (EEP) mentioned previously in the Public Education and Outreach MCM section.

- Septic Tank Owners Program
- Municipal Facilities and Activities Program
- Commercial Facilities Program
- Environmental Kids Club Program

#### **Legal Authority and Enforcement**

The Municipality will review any previously existing ordinance related to Illicit Discharge Detection and/or elimination and will develop and approve a new ordinance which prohibits illegal dumping, requires pet owners to clean up after their dogs, and prohibits all non-storm water discharges, as defined in the Puerto Rico Small MS4 General Permit – PRR04000, into the storm sewer system and implements appropriate enforcement procedures and actions. Storm water includes storm water runoff, snowmelt runoff (non-applicable in Puerto Rico), surface runoff and drainage. All other discharges constitute non-storm water discharges with the exceptions specified in the Section 1.4 of the Puerto Rico General Permit No. PRR040000.

The Municipality will also create an ERP to aid Municipality staff in the consistent and effective enforcement of the resulting regulation(s). The ERP will include a description of the available enforcement actions as well as the timeframes for escalation which apply to each.

#### **Allowable Non-Storm Water Discharges as Significant Pollutant Contributors**

The Municipality does not consider any of the allowable non-storm water discharges described in the Permit to be significant sources of pollutants within the Moca MS4 boundary. No further BMPs are necessary to address allowable non-storm water discharges.



### **Storm Sewer Map**

The Municipality currently does not have a storm sewer infrastructure map. A map of the system will be completed and submitted by October 2013. The map will be created using global positioning system (GPS) technology. The intent of this mapping effort is to develop a tool for detecting illicit discharges to storm sewer systems. The development of the Storm Water sewer system maps includes the following steps:

#### **Data Gathering**

Under this task field visits are conducted to gather Geographic Information System (GIS) data of the Municipalities storm water infrastructure. These data is collected within the limits of the urban areas as delimited by the Census. The data to be gathered includes:

- Storm water inlet locations and invert elevations
- Storm water outfalls and invert elevations
- Receiving water bodies
- NPDES permitted facilities
- Municipal Facilities
- General storm water flow direction on each road and underground pipeline
- In areas with no underground infrastructure, the map will show flow direction lines and the point of discharge of these waters
- Major waste water system infrastructure
- GIS land use data and animal census data, will be used to locate and identify the most significant farming activities and source areas with the highest potential FC load.
- GIS land data will be used to locate and identify the most significant land use source areas with the highest potential load.
- Identification of areas that should be priority to conduct a more detailed study such as closed caption television surveys (CCTVS), dye tests, or smoke tests.

The data is gathered with either a Trimble R6 or Total Station survey equipment. Which survey equipment will be used will depend on the availability of cell phone signal. If a cell phone signal is available, the Trimble R6 equipment will be used. If no cell phone signal is available, then the Total Station must be used.

#### **Development of Storm Sewer Map**

Under this task a drawing layer in ArcGIS format that will be geo-referenced to NAD83 coordinates system will be developed. This layer can later be used to overlay any base map that has been developed in the same coordinate system such as topographic surveys, USGS topographic quadrangles, aerial photographs and road maps among others.





## Municipality of Moca MS4 - Storm Water Management Program (SWMP)

The finalized map will identify the Municipality's storm water infrastructure over an aerial photograph on a scale that presents the necessary level of detail. If this requires the map to be divided into sections, a key map will be developed that depicts the entire study area identifying the match lines of the sub-maps.

The following schedule has been developed to complete the Urban Area MS4 maps in a maximum allocated time of 2 years. The proposed delivery is to complete each phase in a period of one year. The wards included in each phase are specified below.

- First Phase – Pueblo and Moca-Pueblo Ward
- Second Phase – Aceitunas Ward

### Sanitary Sewer Overflow (SSO) Reduction

Sanitary sewer overflows (SSOs) are releases of raw sewage from a separate sanitary sewer system before it has reached a treatment facility. As mentioned in the section introduction, currently the Municipality is working in collaboration with the Puerto Rico Aqueduct and Sewer Authority (PRASA) to identify and eliminate the sanitary sewer system overflows. Raw sewage contains bacteria and nutrients that endanger both human health and the environment.

During heavy rain periods, SSOs has more probability to occur, since the flow of storm water into the system exceeds the design capacity of the conveyance system, resulting in illicit discharges into roads, and streams. While SSOs can occur in any system due to flooding or temporary blockages, chronic overflows indicate a deteriorating system or a system where supply has exceeded capacity.

Eliminating SSO sources can significantly improve water quality. Untreated sewage has the potential to enter streams and other waterbodies and affects aquatic organisms and their habitat. Raw sewage often contains pollutants and toxins that limit dissolved oxygen and promote algal blooms, endangering the aquatic environment.



**Figure 1.** During storm events, sanitary sewers received storm water runoff in addition to wastewater, causing them to overflow (source: USEPA, 2000)

The Municipality of Moca SWM will work in collaboration with PRASA to develop an SSO Reduction Plan on/or before November 2012 and complete its implementation on November 2015. The Municipality will coordinate quarterly meetings with the PRASA West Region Compliance and Operation managers.





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**Illicit Discharge Detection and Elimination Education and Training**

The Municipality of Moca will provide staff as well as residents training regarding the detection and prevention of illicit discharges. New trainings will be developed to educate key staff about illicit discharges (to include discharges from vehicle maintenance). The Municipality will incorporate IDDE information such as how to recognize and prevent an illicit discharge into all existing community presentations conducted by the Municipality Environmental Consultants. In addition, the Municipality will develop a new annual training for Emergency Response Management, and Public Works staff specifically regarding the identification of illicit discharges and spill response. Finally, the directors will be educated regarding illicit discharges during their training as well. As previously described, the Municipality will target educational efforts at homeowners within the MS4 boundary served by aging septic tanks. The Municipality will provide these residents education on proper construction and maintenance of the septic tank.

Finally, the EEP described above in the Public Education and Outreach MCM section will serve to decrease illicit discharges by educating residents on how the actions of homeowners, municipal facilities employees, and regular business activities can have an impact on storm water pollution prevention and by consequence on water quality.

The Municipality Website will include basic educational information about illicit discharges; will provide the opportunity to report illicit discharges, and to request septic tanks cleaning and maintenance services. Also the Municipality current Website will have a new section in which community members may ask questions to the Municipality regarding illicit connections.

***Measurable Goals***

- Approval of an IDDE ordinance to prohibit illicit discharges
- Municipal Website interactive tool to report Illicit Discharges Development
- Completion of storm sewer map
- Development of IDDE Plan
- Development of the Illicit Discharge Investigation SOP
- Completion of dry weather inspections within priority areas of the MS4
- Percentage (%) of detected or reported illicit discharges eliminated
- Number of septic system owners educated about proper maintenance
- Number of illicit connections identified and eliminated



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***Schedule & Milestones***

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Review of Existing Ordinance(s)	Nov 2011	--	2011
Identify Main Storm Drains Inlets in the Municipality MS4	Nov 2011	--	2011
Development of IDDE Ordinance	July 2013	--	2012-2013
Storm Sewer Mapping	Oct 2013	Pueblo and Moca- Pueblo Wards- 2012 Aceitunas Ward – 2013	2012-2013
Development of IDDE Plan	Nov 2013		2012-2013
Develop Illicit Discharge Investigation SOP	July 2013	--	2012-2013
Implement IDDE Plan	July 2015	--	2013 - 2015
Post IDDE Information and Complaint Tool	Nov 2015	--	2013 - 2015
Investigate Illicit Discharges Reported	July 2015	100%	2012 - 2015
Dry Weather Inspections	July 2015	100% Downtown	2014-2015
Conduct IDDE Training	Nov 2015	1/year	2012-2015
Develop Septic System Educational Program	July 2013	--	2012-2013
Development of SSO Reduction Plan	Nov 2013	--	2012 – 2013
Implement SSO Reduction Plan	July 2015	--	2014 - 2015
Development and Implementation of a Watershed Monitoring Program	Nov 2015		2014-2015

*Note 1: Either Frequency or Deadline is provided based upon the type of milestone proposed.*

*Note 2: Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.*

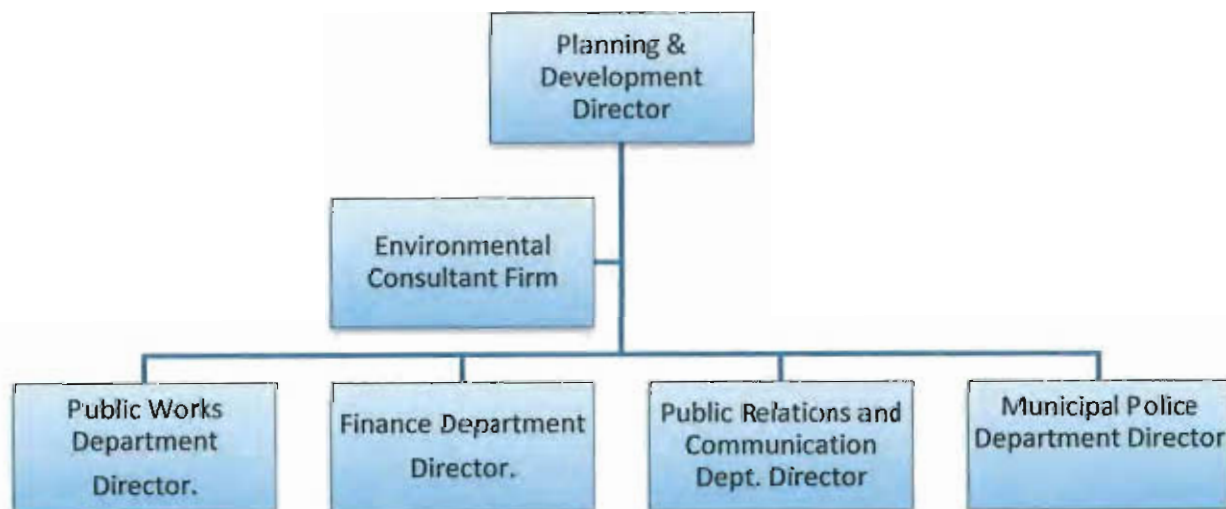
*Note 3: Permit Years indicate the years in which the associated BMP will be implemented.*



## **Construction Site Storm Water Runoff**

The Puerto Rico General Permit requires that the permittee develops, implements, and enforces a program to reduce pollutants in any storm water runoff to their MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of storm water discharges from construction activity disturbing less than one acre must be included in the Municipality program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. If the NPDES permitting authority waives requirements for storm water discharges associated with small construction activity in accordance with § 122.26(b)(15)(i), the permittee is not required to develop, implement, and/or enforce a program to reduce pollutant discharges from such sites. The program must include the development and implementation of, at a minimum – an ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State or local law; requirements for construction site operators to implement appropriate erosion and sediment control best management practices; requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality; procedures for site plan review which incorporate consideration of potential water quality impacts; procedures for receipt and consideration of information submitted by the public; and procedures for site inspection and enforcement of control measures.

The Planning and Development Department Director with the cooperation of an environmental consulting firm, the Public Relations and Communication Department Director, the Public Works Department Director, and Finance Department Director and the Municipal Police Department will implement the BMPs for the Construction Minimum Control Measure.





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### *Rationale*

In 2011, the Municipality reviewed existing ordinances and procedures in 2011 to determine regulatory authority needs. The Municipality will develop an ordinance which will require erosion and sediment controls on projects which disturbs more than 900 m<sup>2</sup> (0.22 acres) or moves a volume of soil greater than or equal to 40 m<sup>3</sup>. This threshold is the same as the threshold in existing Commonwealth of Puerto Rico regulations, most specifically the “Reglamento para el Control de la Erosión y Prevención de la Sedimentación” mandated by the “Ley sobre Política Pública Ambiental” (Law No. 416, September 22, 2004). In addition, the ordinance will require that other wastes on construction projects must be controlled as well (e.g. trash, concrete wash out). The ordinance will include specific requirements as well as enforcement mechanisms that will be utilized to require compliance.

The Municipality of Moca will require that developers will have to submit a copy of the Control of Erosion and Prevention of Sedimentation Plan (Plan CES) which is required by the OGPe Construction General Permit and a copy of the NPDES Construction NOI and SWPPP for adequacy to comply with the new Municipality ordinance. The Municipality will review and approve. If it is not adequate a revised CES plan and/or SWPPP will be required.

Developers will not be allowed to begin a qualifying construction project until the erosion and sediment control (CES) plan and the SWPPP has been approved by the Municipality. Once the plans are approved and construction begins, the Municipality will inspect projects based on their potential for storm water impacts. Each project will be ranked according to its size, location, compliance history of the contractors, and other factors to be determined. The frequency of inspection will be based on this priority ranking, however, at a minimum, each qualifying project will be inspected once after the initial grading has begun to ensure BMPs are in place, once within 48 hours of a rain event to assess adequate BMP maintenance and repair, and once when the project is completed to ensure that all areas are stabilized and BMPs have been removed. High priority projects may be inspected more frequently.

The Municipality will develop two Construction SOP documents:

1. Erosion and Sediment Control Plan Revision Standard Operating Procedure. – This SOP will describe the plan review procedures for the required erosion and sediment control plan. This SOP will include references to preferred BMPs as well as checklists for the plan reviewers to follow.
2. Construction Projects Inspection Protocol and Notification of Violation to PREQB Process Standard Operating Procedure- This SOP will describe inspection and project compliance tracking procedures. This SOP will include an inspection form for inspectors to use which will encourage thorough and consistent inspection and a procedure to report permit violations to PREQB.

Finally, the Municipality will develop an ERP specific to the enforcement of storm water requirements on construction projects. The ERP will include a description of the available enforcement actions as well as the timeframes for escalation.





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Projects funded with municipal or public funds will also have to comply with all Municipality erosion and sediment control regulations. Plan review and inspection staff will be trained in the requirements of the new ordinance, the appropriate SOPs and use of the ERP. The trainings will be conducted annually to ensure staff is kept up to date on BMPs and procedures. The trainings may be held “in-house” or staff may attend trainings provided by outside sources such as PREQB or USEPA. The Municipality will inform the general public of ways to report violations of erosion and sediment control regulations on construction projects through storm water events as well as the Municipality Website.

The Municipality will revise and modify the current BID procedures (the process through which a fair opportunity is provided to suppliers to provide a technical and economical proposal to perform a specified work or services), documents, and contract templates in order to incorporate the SWMP requirements. Contractors will be educated about storm water requirements through construction BMP trainings and workshops, brochures available at Municipality offices, information on the storm water Website, and during one-on-one compliance assistance provided during construction project inspections.

***Measurable Goals***

- Development of erosion and sediment control ordinance
- Development of Construction Storm Water Pollution Prevention Educational Material
- Development of Construction Erosion and Sediment Control Plan Review SOP
- Development of Construction Projects Inspection and Violations Notification SOP
- Revision and Modification of BID specifications documents and contract templates.
- ERP specific to enforcement of storm water requirements on construction projects including available enforcement actions and timeframe for escalations
- Number of plan review staff trained
- Number of inspection staff trained
- Number of inspections conducted at each private construction project
- Number of inspections conducted at each public construction project
- Number of contractors trained
- Number of educational events where BMPs fact sheet is distributed
- Municipal website development
- Construction educational information on municipal website
- Construction interactive section on municipal website to report erosion and sediment control violation taken place at construction sites.



**Municipality of Moca**  
**MS4 - Storm Water Management Program (SWMP)**

***Schedule & Milestones***

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Review existing ordinances and municipal procedures	Nov 2011	--	2011
Develop the Erosion and Sediment Control Ordinance	July 2013	--	2012-2013
Implement Erosion and Sediment Control Ordinance – Public and Private Projects	Nov 2013	--	2013
Develop Construction Project Inspection SOP	Sept 2013	--	2013
Develop Erosion and Sediment Control Plan Review SOP	Sept 2013	--	2013
Revise and Modify of BID documents and Contracts	July 2013	--	2013
Develop ERP	Nov 2013	--	2013
Develop Construction SW Pollution Prevention Educational Material	Jan 2014	--	2014
Conduct Plan Review Staff Trainings	Nov 2015	1/year	2013-2015
Conduct Inspection Staff Trainings	Nov 2015	1/year	2013-2015
Conduct Construction Contractor Training/Workshops	Nov 2015	1/year	2013-2015
Conduct the Public Project Inspections	Sept 2015	100% of projects/year	2014-2015
Private Project Inspections	Sept 2015	100% of projects/year	2014-2015
Conduct Plan Reviews & Inspections	Sept 2015	100% of projects/year	2014-2015
Development of the Environmental Section on Municipal Website	Nov 2012	--	2012
Construction Educational Information on Website	June 2015	Updated quarterly	2013-2015
Construction SW Pollution Reporting Events Interactive Section in Website	Sept 2014	--	2013-2014
Distribution Contractors' Brochure on Storm Water Events	Jan 2015	2 SW Events/yr	2014-2015

*Note 1: Either Frequency or Deadline is provided based upon the type of milestone proposed.*

*Note 2: Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.*



## Municipality of Moca MS4 - Storm Water Management Program (SWMP)

*Note 3: Permit Years indicate the years in which the associated BMP will be implemented.*

### Post-Construction Storm Water Management in New Development and Redevelopment

Puerto Rico MS4 General Permit requires that the Municipality develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the permittee small MS4. The Municipality's program must ensure that controls are in place that would prevent or minimize water quality impacts; develop and implement strategies which include a combination of structural and/or non-structural BMPs appropriate for the community; and use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State or local law; and ensure adequate long-term operation and maintenance of BMPs.

The Planning and Development Department Director in cooperation with an environmental consulting firm, the Public Works Department Director, the Finance Department Director, the Municipal Legislature Secretary, the Communications and Public Relations Department Director and the Municipal Police Department will be responsible to implement and coordinate the BMPs for the Post-construction Minimum Control Measure.



### Rationale

In 2011, the Municipality reviewed existing ordinances and procedures to determine regulatory authority needs. The Municipality of Moca does not currently require post-construction BMPs, inspect facilities nor require that private property owners maintain implemented BMPs. The Municipality will develop an



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ordinance to address post-construction runoff from new development and redevelopment projects by requiring the implementation and maintenance of structural and non-structural BMPs.

Currently the Puerto Rico Planning Board and the PRDNER regulate post-construction runoff from new developments and redevelopment projects and require that post-development runoff not exceed existing or pre-development runoff. A hydrologic/hydraulic study is required to ensure this. The Municipality will review the project threshold requirements (i.e. type or size of project required to implement the requirements) and performance standards included in these regulations and determine if more stringent or additional requirements should be implemented in Moca. The Municipality will implement post-construction standards at least as stringent as those required by the Planning Board and PRDNER.

The Municipality will also consider the most effective method of ensuring the post-construction BMPs are maintained as needed throughout their life. The Municipality will require property owners to inspect and maintain BMPs as well as a Municipality program to inspect and require maintenance of BMPs through the use of maintenance agreements, standard conditions on development plans, deed restrictions, etc.

The Municipality will implement Municipality post-construction regulations on public construction projects as well.

The Municipality will develop a Post Construction ordinance which will include the appropriate project thresholds, post-construction structural and non-structural performance standards, as well as BMP maintenance requirements<sup>10</sup>.

The Municipality of Moca will require that developers will have to submit a plan which includes the BMPs necessary to control post-construction runoff. The Municipality will review the existing regulations and requirements for the hydrologic/hydraulic study which is required by PRDNER for adequacy to comply with the new Municipality ordinance. If the study is adequate, developers will be required to submit this same study to the Municipality for review and approval. If it is not adequate, an additional post-construction BMP plan will be required<sup>11</sup>.

Developers will not be allowed to begin a qualifying construction project until the post-construction BMP plan has been approved by the Municipality. The Municipality will inspect all post-construction BMPs upon completion to ensure they are implemented or installed per specification. These "as built" inspections will be required prior to the completion of the project. In addition, the post-construction BMPs will be inspected (either by the Municipality or by the property owner/agent) on a regular basis (no less than annually) to ensure that they are being maintained and operating properly.

To facilitate and standardize the implementation of the proposed BMPs the Municipality will develop two Post-Construction SOPs. The Municipality will develop a:

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<sup>10</sup> If appropriate, the requirements for construction and post-construction BMPs may be combined into a single ordinance.

<sup>11</sup> If appropriate, Moca may require that Municipality construction and post-construction BMP requirements be combined into a single site plan.





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1. Post-Construction BMPs Operation and Maintenance Plan (O&MP) Revision SOP to describe the plan review procedures for the required post-construction BMP plan. This SOP will include references to preferred BMPs as well as checklists for the plan reviewers to follow.
2. Storm Water Control Post Construction Measurements Operation and Maintenance Inspection SOP to describe inspection and project compliance tracking procedures. This SOP will include an inspection form for inspectors (i.e. either Municipality inspectors or agents of the owners) to use which will encourage thorough and consistent inspections.

Plan review and inspection staff will be trained in the requirements of the new ordinance, the appropriate SOPs and use of the ERP. The trainings will be conducted annually to ensure staff is kept up to date on BMPs and procedures. The trainings may be held “in-house” or staff may attend trainings provided by outside sources such as PREQB or USEPA.

The Municipality will inform the general public of ways to report storm water issues at storm water events and trainings as well as the Municipality Website. Developers and engineers will be educated about the Municipality’s post-construction BMP requirements via the Website as well.

Finally, the Municipality will develop an ERP specific to the enforcement of post-construction storm water requirements on private property. The ERP will include a description of the available enforcement actions as well as the timeframes for enforcement escalation which apply to each<sup>12</sup>.

### ***Measurable Goals***

- Development of Post Construction Ordinance
- Storm Water Post Construction ERP Development
- Development of Storm Water BMPs O&M plan review SOP
- Development of Post Construction Measures O&MP Inspection SOP
- Number of plan review staff trained
- Number of inspection staff trained
- Number of post-construction BMP O&M plans reviewed for adequacy
- Number of “as built” post-construction BMP inspections conducted
- Percent (%) of development projects with “as built” inspections performed prior to occupancy

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<sup>12</sup> If appropriate, the Municipality may develop a single ERP document which will address both construction and post-construction ordinance enforcement.



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- Development of Post-Construction Educational Material
- Municipal Website development
- Post-Construction Information posted on MS4 Storm Water Management Website section

***Schedule & Milestones***

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Review of existing ordinances and procedures	Nov 2011	--	2011
Develop post-construction ordinance	July 2013	--	2012-2013
Implement post-construction ordinance – public and private projects	July 2014	--	2014
Develop BMPs O&M Plan Review SOP	August 2013	--	2013
Develop Post Construction Measures O&M Inspection SOP	Sept 2013	--	2013
Develop Storm Water Post Construction ERP	Oct 2013	--	2013
Conduct O&MP Plan Review Staff, Developers, and contractors Trainings	Jan 2015	1/year	2014-2015
Conduct O&MP Inspection Staff, Developers and Contractors Trainings	Jan 2015	1/year	2014-2015
Conduct Post Construction BMP Plan Review	Nov 2015	100% of projects/yr	2014-2015
Conduct “as built” inspections performed prior occupancy	Nov 2015	100% of projects/yr	2014-2015
Development of Post Construction Educational Material	Jan 2014	--	2014-2015
Development of Municipal Website	Sept 2011	--	2011
Publish Post-Construction Information on Website	Jan 2013	--	2012-2013

*Note 1:* Either Frequency or Deadline is provided based upon the type of milestone proposed.

*Note 2:* Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.

*Note 3:* Permit Years indicate the years in which the associated BMP will be implemented.

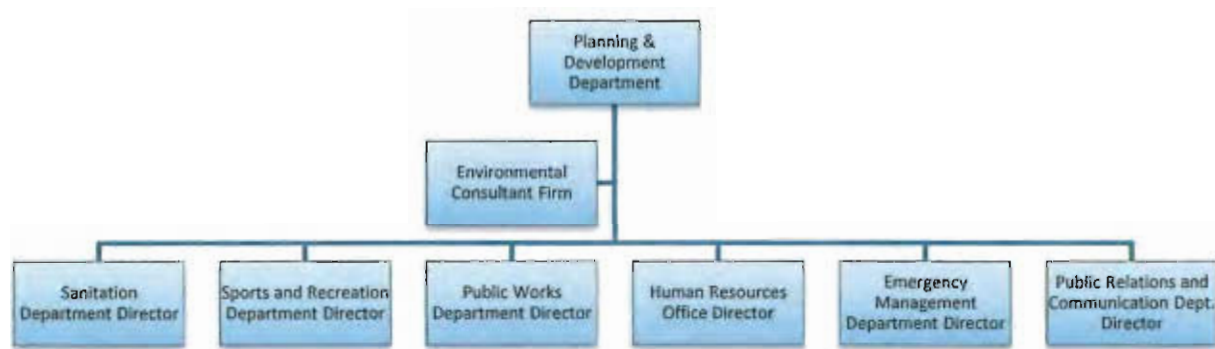


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## **Pollution Prevention/Good Housekeeping for Municipal Operations**

The Puerto Rico MS4 General Permit requires that Moca develop and implement a program with the ultimate objective of preventing or reducing pollutants runoff from municipal operations. This program must include an education and training component using training materials that are available from EPA, the State or other organizations. The program must include employee training to prevent and reduce storm water pollution from activities such as fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.

The Planning and Development Department Director in coordination with an environmental consultant company, and with the cooperation of the Sanitation Department Director, the Sports and Recreation Department Director, the Public Works Department Director, the Human Resources Office, the Public Relations and Communication Department Director, and the Emergency Management Department Director will implement and coordinate the BMPs for the Pollution Prevention/Good Housekeeping Minimum Control Measure.



### ***Rationale***

The facilities managed by the Municipality of Moca and the activities conducted by the Municipality's staff with the highest potential to contribute to storm water pollution has been identified and will be the major focus of the selected BMPs. The Municipality will conduct an extensive analysis of the facilities with pollution potential and will incorporate any facility that was not included originally to select and implement the appropriate BMPs to address this potential to the MEP.



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### **Facility Storm Water Management**

The Municipality of Moca operates and manages several facilities within the MS4 area such as the:

- Municipal Offices
- Public Works Fleet Maintenance Facility,
- Recyclable Material Receiving Center
- Sports and Recreational Facilities,
- Municipal Landfill

A full inventory of facilities will be created and the list will be prioritized based upon the potential for discharge of pollutants into the MS4 – both during rain events and dry weather (i.e. illicit discharges). An on-site inspection will be conducted at each facility and the findings will be used during the prioritization process. Factors impacting priority rating will include materials managed or stored, activities conducted, proximity to a water body, and overall condition of the facility during the facility inventory inspection.

The Municipality will then develop a facility pollution prevention plan (FPPP) for each of the highest priority facilities to prevent pollutant discharges. The FPPPs will follow the basic guidelines provided by USEPA.<sup>13</sup> Employees will then be informed of the FPPP requirements and trained as necessary in the proper implementation of BMPs. In addition, spill prevention and response training will be provided to all field staff as described in Illicit Discharge Detection and Elimination Minimum Control Measure.

The Municipality will regularly inspect (no less than annually) all high priority facilities to ensure that the BMPs outlined in the FPPPs are implemented appropriately. In addition, the Municipality will review, at least once per permit term, the prioritization of facilities and amend, as necessary, to ensure that all facilities are properly prioritized.

### **Municipal Activities**

The Municipality of Moca performs basic maintenance activities in order to provide the appropriate level of service to its residents. Several of these activities provide added storm water benefits as well. These activities include a general catch basin and storm sewer maintenance and street sweeping. Moca cleans the storm sewer system and catch basins at least twice per year. In addition, in coordination with PRDNER garbage and trash are cleaned annually from the river banks and streams in order to decrease flooding. The Municipality dry sweeps all downtown zone streets daily and clean debris from the downtown MS4 on a weekly basis and in the urban area on a daily basis. These activities will continue during the permit term. Other Municipality activities (e.g. parks and open space maintenance) could be sources of pollutants into the MS4. The Municipality will review typical municipal activities conducted by field staff and determine which BMPs are necessary to minimize this potential discharge.

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<sup>13</sup> Developing your Storm Water Pollution Prevention Plan: A Guide for Industrial Operators. February 2009. EPA 833-B-09-002.  
[http://www.epa.gov/npdes/pubs/industrial\\_swppp\\_guide.pdf](http://www.epa.gov/npdes/pubs/industrial_swppp_guide.pdf)





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These BMPs will be described, as necessary, in SOP documents that will be made available to all pertinent field staff. The field staff will be trained, as necessary, to ensure the proper implementation of these BMPs. As previously stated, all public construction projects will follow the guidelines described in the Construction and Post-Construction Minimum Control Measures.

### **Employee Training**

The Municipality will conduct annual training for the Municipality's field and management staff regarding:

- General Storm Water Management Program
- Illicit Discharge Detection and Elimination
- Construction and Post Construction BMPs
- Municipal Maintenance Activity Specific SOPs

As part of the Pollution Prevention Good Housekeeping MCM the Municipal Facilities Employees will be trained in specific good housekeeping and pollution prevention practices in their respective area of work. The trainings will include but will not be limited to:

- Spill prevention and response plan
- Solid waste management
- Recycling program
- Proper good housekeeping BMPs that should be employed, by fleet maintenance staff, during vehicle maintenance and washing

### **Measurable Goals**

- Development of high priority municipal facilities inventory
- Municipal Facilities Inspection
  - Number and percentage of facility inspections completed
  - Number of FPPPs completed
- Development of spill response plan that clearly outlines procedures to be followed in the event of an accidental spill on site for all applicable facilities
- Incorporation of the municipal facilities in the MS4 GIS Maps that will be completed on July 2014.
- Number and percentage of field staff trained in activity or facility-specific BMPs
- Activity SOPs completed to assist field staff in BMP implementation
- Quantity of streets swept weekly
- Quantity of catch basins cleaned.



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***Schedule & Milestones***

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Develop Municipal Facility List	Nov 2011	100% of Municipal Facilities	2011
Perform Initial Facilities Inspections	August 2012	--	2012
Incorporate Municipal Facilities on MS4 GIS Maps	Nov 2012	---	2012
Develop FPPPs for high priority facilities	July 2014	50% of High Priority Facilities-2013 50% of High Priority Facilities-2014	2013-2014
Develop Spill Response Plan for Applicable Facilities	Nov 2014	50% of Applicable Facilities-2013 50% of Applicable Facilities-2014	2013-2014
Develop Training for Municipal Facilities and Activities	Jan 2014	--	2014
Conduct Municipal Facilities and Activities Staff Training on Specific BMPs	June 2015	1/year	2014-2015
Develop Activity-Specific SOPs	Nov 2014	--	2014
Conduct Annual Inspections at High Priority Municipal Facilities	July 2013	100% of Facilities 1/year	2013-2015
Implement FPPPs	Nov 2015	100 % of High Priority Facilities	2013-2015
Review Facility Prioritization	July 2015	Yearly	2014-2015
Review Activities for Discharge Potential	July 2014	Continuous	2013-2015



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<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Clean Debris from MS4	Nov 2015	All MS4 Quarterly	2011-2015
Sweep Streets	Nov 2015	Moca-Pueblo Ward All Streets Weekly Downtown	2011-2015
Develop and Distribute Educational Materials for Municipal Employees	Nov 2015	Continuous	2011 - 2015

*Note 1:* Either Frequency or Deadline is provided based upon the type of milestone proposed.

*Note 2:* Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.

*Note 3:* Permit Years indicate the years in which the associated BMP will be implemented.



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## BMPs, Milestones and Completion Due Dates per MCM Summary

### Public Education and Outreach on Storm Water Impacts

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Develop General Awareness Message	Nov 2011	--	2011
Develop Awareness Survey	August 2012	--	2012
Distribute Awareness Survey	Sept 2012- Nov 2012	--	2012
Analyze Survey Results and Develop EEP	July 2013		2013
Implement EEP	Nov 2015	--	2013 - 2015
Post General Storm Water Information on Website	March 2013		2012
Publish Articles on Storm Water Pollution Prevention	Nov 2015	2 articles/year	2012-2015
Conduct Environmental Kids Club Presentations	Oct 2015	2/year	2011-2015
Incorporate storm water message into recycling program presentations	Aug 2012	--	2012
Conduct Commercial Facilities Owners Presentations	Nov 2015	2/year	2013-2015
Septic Tanks Home Owners Training	Nov 2015	1 ward/year	2013-2015

*Note 1: Either Frequency or Deadline is provided based upon the type of milestone proposed.*

*Note 2: Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.*

*Note 3: Permit Years indicate the years in which the associated BMP will be implemented.*

### Public Involvement/Participation

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Development of the Municipal Informative Bulletin	2015	1/year	2011-2015
Inform and Solicit Public Input at the Municipality's Annual Achievement Report	Nov 2015	1/year	2012-2015
Volunteer Events (i.e., stream and lake cleanups)	Nov 2015	2/year	2011-2015





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<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Incorporate Storm Water Educative Information in the Activity named "La Balseada del Rio Culebrinas"	Nov 2015	1/year	2013-2015
Post SWMP Information on Website	Nov 2012	--	2012
Develop Art for Storm Drain Marker	Sept 2012	--	2012
Implement Storm Drain Marker Program	July 2015	--	2013 – 2015
Install Storm Drain Markers in coordination with Volunteers	July 2015	100 markers/year	2013 – 2015

*Note 1:* Either Frequency or Deadline is provided based upon the type of milestone proposed.

*Note 2:* Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.

*Note 3:* Permit Years indicate the years in which the associated BMP will be implemented.

### Illicit Discharge Detection and Elimination

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Review of Existing Ordinance(s)	Nov 2011	--	2011
Identify Main Storm Drains Inlets in the Municipality MS4	Nov 2011	—	2011
Development of IDDE Ordinance	July 2013	—	2012-2013
Storm Sewer Mapping	Oct 2013	Pueblo and Moca- Pueblo Wards- 2012 Aceitunas Ward – 2013	2012-2013
Development of IDDE Plan	Nov 2013		2012-2013
Develop Illicit Discharge Investigation SOP	July 2013	--	2012-2013
Implement IDDE Plan	July 2015	--	2013 - 2015
Post IDDE Information and Complaint Tool	Nov 2015	--	2013 - 2015
Investigate Illicit Discharges Reported	July 2015	100%	2012 - 2015



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<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Dry Weather Inspections	July 2015	100% Downtown	2014-2015
Conduct IDDE Training	Nov 2015	1/year	2012-2015
Develop Septic System Educational Program	July 2013	--	2012-2013
Development of SSO Reduction Plan	Nov 2013	--	2012 – 2013
Implement SSO Reduction Plan	July 2015	--	2014 - 2015
Development and Implementation of a Watershed Monitoring Program	Nov 2015		2014-2015

*Note 1: Either Frequency or Deadline is provided based upon the type of milestone proposed.*

*Note 2: Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.*

*Note 3: Permit Years indicate the years in which the associated BMP will be implemented.*

### Construction Site Storm Water Runoff

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Review existing ordinances and municipal procedures	Nov 2011	--	2011
Develop the Erosion and Sediment Control Ordinance	July 2013	--	2012-2013
Implement Erosion and Sediment Control Ordinance – Public and Private Projects	Nov 2013	--	2013
Develop Construction Project Inspection SOP	Sept 2013	--	2013
Develop Erosion and Sediment Control Plan Review SOP	Sept 2013	--	2013
Revise and Modify of BID documents and Contracts	July 2013	--	2013
Develop ERP	Nov 2013	--	2013
Develop Construction SW Pollution Prevention Educational Material	Jan 2014	--	2014
Conduct Plan Review Staff Trainings	Nov 2015	1/year	2013-2015



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<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Conduct Inspection Staff Trainings	Nov 2015	1/year	2013-2015
Conduct Construction Contractor Training/Workshops	Nov 2015	1/year	2013-2015
Conduct the Public Project Inspections	Sept 2015	100% of projects/year	2014-2015
Private Project Inspections	Sept 2015	100% of projects/year	2014-2015
Conduct Plan Reviews & Inspections	Sept 2015	100% of projects/year	2014-2015
Development of the Environmental Section on Municipal Website	Nov 2012	--	2012
Construction Educational Information on Website	June 2015	Updated quarterly	2013-2015
Construction SW Pollution Reporting Events Interactive Section in Website	Sept 2014	--	2013-2014
Distribution Contractors' Brochure on Storm Water Events	Jan 2015	2 SW Events/yr	2014-2015

*Note 1: Either Frequency or Deadline is provided based upon the type of milestone proposed.*

*Note 2: Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.*

*Note 3: Permit Years indicate the years in which the associated BMP will be implemented.*

## **Post-Construction Storm Water Management in New Development & Redevelopment**

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Review of existing ordinances and procedures	Nov 2011	--	2011
Develop post-construction ordinance	July 2013	--	2012-2013
Implement post-construction ordinance – public and private projects	July 2014	--	2014
Develop BMPs O&M Plan Review SOP	August 2013	--	2013
Develop Post Construction Measures O&M Inspection SOP	Sept 2013	--	2013



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<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Develop Storm Water Post Construction ERP	Oct 2013	--	2013
Conduct O&MP Plan Review Staff, Developers, and contractors Trainings	Jan 2015	1/year	2014-2015
Conduct O&MP Inspection Staff, Developers and Contractors Trainings	Jan 2015	1/year	2014-2015
Conduct Post Construction BMP Plan Review	Nov 2015	100% of projects/yr	2014-2015
Conduct "as built" inspections performed prior occupancy	Nov 2015	100% of projects/yr	2014-2015
Development of Post Construction Educational Material	Jan 2014	--	2014-2015
Development of Municipal Website	Sept 2011	--	2011
Publish Post-Construction Information on Website	Jan 2013	--	2012-2013

*Note 1:* Either Frequency or Deadline is provided based upon the type of milestone proposed.

*Note 2:* Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.

*Note 3:* Permit Years indicate the years in which the associated BMP will be implemented.

### Pollution Prevention/Good Housekeeping for Municipal Operations

<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
Develop Municipal Facility List	Nov 2011	100% of Municipal Facilities	2011
Perform Initial Facilities Inspections	August 2012	--	2012
Incorporate Municipal Facilities on MS4 GIS Maps	Nov 2012	---	2012
Develop FPPPs for high priority facilities	July 2014	50% of High Priority Facilities-2013	2013-2014





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<b>Milestone</b>	<b>Completion Deadline</b>	<b>Frequency</b>	<b>Permit Year(s)</b>
		50% of High Priority Facilities-2014	
Develop Spill Response Plan for Applicable Facilities	Nov 2014	50% of Applicable Facilities-2013	2013-2014
		50% of Applicable Facilities-2014	
Develop Training for Municipal Facilities and Activities	Jan 2014	--	2014
Conduct Municipal Facilities and Activities Staff Training on Specific BMPs	June 2015	1/year	2014-2015
Develop Activity-Specific SOPs	Nov 2014	--	2014
Conduct Annual Inspections at High Priority Municipal Facilities	July 2013	100% of Facilities	2013-2015
		1/year	
Implement FPPPs	Nov 2015	100 % of High Priority Facilities	2013-2015
Review Facility Prioritization	July 2015	Yearly	2014-2015
Review Activities for Discharge Potential	July 2014	Continuous	2013-2015
Clean Debris from MS4	Nov 2015	All MS4 Quarterly	2011-2015
Sweep Streets	Nov 2015	Moca-Pueblo Ward All Streets Weekly Downtown	2011-2015
Develop and Distribute Educational Materials for Municipal Employees	Nov 2015	Continuous	2011 - 2015

*Note 1: Either Frequency or Deadline is provided based upon the type of milestone proposed.*

*Note 2: Completion Deadline indicates the Permit term year at the end of which the milestone will be completed.*

*Note 3: Permit Years indicate the years in which the associated BMP will be implemented.*